We are in this together:

Sport brand involvement and fans' well-being

Yiran Su, Ph.D. (Corresponding author)
University of Georgia - Department of Kinesiology
Office 359, Ramsey Student Centre
330 River Road, Athens, GA 30602
Email: yiransu@uga.edu
Phone: +1 706 542 4378

James Du, Ph.D.
Florida State University, Department of Sport Management
1002 Tully Gym, 139 Chieftan Way
Florida State University Tallahassee, FL 32306
Email: jdu3@fsu.edu
Phone: + 850 644 1859

Rui Biscaia, Ph.D.
Department for Health, Faculty of Humanities and Social Sciences
University of Bath, UK.
Claverton Down, Bath, BA2 7AY, United Kingdom
Email: rdb51@bath.ac.uk
Phone: +44 (0) 1225 385429

Yuhei Inoue, Ph.D.
Manchester Metropolitan University,
Department of Economics, Policy and International Business, Business School,
Oxford Road, Manchester M15 6BH, United Kingdom
Email: y.inoue@mmu.ac.uk

Research Question: The COVID-19 pandemic has highlighted the need for a transformative perspective on the role of sport brands in promoting fans' psychological well-being. Drawing upon attachment theory, the current research explores how individuals' involvement with sport brands may contribute to their psychological well-being in the wake of COVID-19.

Research Methods: Data were collected from sport fans (n = 770) in mainland China through an online survey. Machine learning–based model selection algorithms were used to optimize the balance between the predictive power and parsimoniousness of the empirical model. Bayesian structural equation modeling was performed to examine the effects of sport brand involvement, crisis management performance, and perceived togetherness on fans' sense of hope and emptiness.

Results and Findings: The results indicate that fans' involvement with sport brands was positively associated with fans' psychological well-being. Sport brand involvement mitigated fans' perceived emptiness. This relationship was partially mediated by perceived togetherness but not by crisis management performance. Furthermore, sport brands' crisis management performance and perceived togetherness fully mediated the positive relationship between sport brand involvement and hope.

Implications: This research contributes to theorizing the transformative role of sport brands in enhancing fans' psychological well-being. We offer an alternative view of sport branding literature by moving beyond fans' contributions to business outcomes to explore how sport brands may benefit fans' well-being. Findings highlight the importance of the transformative power of "we" in unifying sport brands and fans amid the uncertainty of the COVID-19 pandemic.

Introduction

> Today we're all playing on the same team. We need to be strong in this fight. If we can help someone, let's do it. The situation affects all of us, so we ask you to follow instructions and listen to those who know best. Be responsible. We believe we'll be able to return to our normal lives soon. We're in this situation together and we'll endure it together.
>
> ---Robert Lewandowski, Bayern Munich

The COVID-19 pandemic has brought unprecedented challenges to communities and economies worldwide. Beyond public health concerns, it is widely anticipated that the pandemic will spark a full-blown economic calamity and, in turn, a quality-of-life crisis (Spinelli & Pellino, 2020). Similar to other service industries, sport brands' operations have been jeopardized by COVID-19 given the industry's reliance on human mobility. For example, numerous sport leagues and events were paused, many athletes ceased formal training (The Guardian, 2020), and most competitions were later held in "sport bubbles" without a live audience (Wetsman, 2020). The suspension of sport events and restrictions on physical activity and live spectators has elicited intense discussion given the sport industry's prominent role in society and its symbolic meaning relative to health, hope, and joy (Smith, 2009). Put simply, individuals' involvement in sport can play a key role in well-being (Silva et al., 2020), which becomes even more important during a crisis (Inoue et al., 2015, 2021). The significance of sport at societal and community levels is evident in the strategies many sport brands have put forward to address the COVID-19 crisis. These efforts are underpinned by an aim to cultivate a sense of togetherness, unity, and shared values during uncertain times (Smith & Casper, 2020).

Studies have revealed a connection between participatory sport consumption and physical health (e.g., Sato et al., 2016) along with a relationship between team identification or sport spectatorship and positive psychological outcomes (e.g., Doyle et al., 2016; Inoue et al., 2017; Wann, 2006). However, work that delineates the roles of sport brands in promoting fans' well-being during a crisis is sparse. Despite the popularity of sport branding research exploring managerial outcomes such as fan satisfaction, engagement, and loyalty (e.g., Biscaia et al., 2013), there has been insufficient discussion considering how sport brands may promote fans' well-being amid a crisis. The consequences of COVID-19 could threaten individuals' quality of life for years to come (Usher et al., 2020); therefore, advancing the knowledge around how sport brands might help people manage psychological disturbances is imperative (Inoue et al., 2021). The purpose of the current research is to explore how individuals' involvement with sport brands may contribute to their psychological well-being in the wake of COVID-19.

Resonating with earlier work on fans' psychological connections with their team and well-being in a post-disaster context (Inoue et al., 2015), we situate this study within transformative sport service research (TSSR) with a focus on sport brands. TSSR intends to expand understanding of how sport service entities contribute to personal and collective well-being (Inoue et al., 2020; Katz et al., 2020), serving as an appropriate foundation for this research. Spectator sport events may influence consumer well-being (Lianopoulos et al., 2020; Wann, 2006). In this study, we examine how sport brands (i.e., team and athlete brands) contribute to fans' psychological well-being.

In response to COVID-19, sport brands should emphasize "togetherness" with their stakeholders to promote a sense of connectedness through their crisis management strategies. The "we" notion, as indicated in the above quote from Bayern Munich star Robert Lewandowski

(Bundesliga, 2021), encapsulates a sport brand's vision of co-creating shared goals to combat COVID-19-induced challenges. From fans' perspectives, involvement with sport brands will likely reinforce the positivism individuals derive from feeling attached to a larger community. The present study refers to attachment theory (Steele, 2020) and acknowledges the importance of TSSR (Inoue et al., 2020). Specifically, we propose that fans' perceptions of sport brands' crisis management and sense of togetherness lead to positive downstream effects of sport brand involvement on fans' well-being amid COVID-19. Machine learning and Bayesian structural equation modeling (SEM) were employed to verify the proposed model and predict fans' states of psychological well-being. By doing so, we contribute to the burgeoning research on TSSR and provide actionable insight into how sport brands can manage the effects of social crises, such as COVID-19, on fans' psychological well-being.

Conceptual Background

Transformative Sport Service Research

A growing body of service research—collectively referred to as transformative service research—revolves around the life-impacting nature of services to create positive changes and improvement in the well-being of individuals, communities, and ecosystems (Anderson & Ostrom, 2015; Anderson et al., 2013). TSSR applies the tenets of transformative service research to sport consumption contexts by connecting sport services (e.g., competitions, events, programs), well-being outcomes, and sport organizations' goals (Inoue et al., 2020). The central aim of TSSR is to improve the well-being of those involved in the consumption and production of sport services by generating knowledge with implications for optimal sport service delivery (Inoue et al., 2020; Katz et al., 2020). Prior to COVID-19, a handful of scholars had begun to explore the complexities of sport consumers' well-being in terms of TSSR. Table 1 provides a

summary of recent research on this topic. Positive well-being outcomes of note include self-esteem (Lianopoulos et al., 2020), life satisfaction (Oh et al., 2020), presence of meaning (Wann et al., 2017), and outcomes' relationships with the antecedents of sport service consumption (e.g., team identification and event attendance) (Inoue et al., 2015). Collectively, these studies reflect the importance of the psychological connections that individuals establish with sport in promoting consumers' well-being. When consuming sport services, the emotional and affective significance of fans' ties to sport entities is instrumental in engendering positive well-being outcomes (Inoue et al., 2020)—especially during COVID-19, when consumers face greater mental health risks than they otherwise might (Pierce et al., 2020). Given myriad constraints to normal sport service delivery, this pandemic has presented a challenging yet unique environment in which researchers can assess the roles of sport brands in promoting consumers' well-being.

[Insert Table 1 around here]

In terms of the well-being benefits of sport services, TSSR considers interactions between sport service providers (e.g., sport brands) and sport consumers (Inoue et al., 2020). Interaction covers all consumer contact during service entities' delivery processes: interpersonal interactions with employees along with general service usage and interaction with other customers (Anderson et al., 2013). Broadly speaking, service–consumer interaction can yield positive psychological and social states that contribute to consumers' well-being (Gallan et al., 2019). The current study examines the relationship between fans' sport brand involvement and well-being during COVID-19. Sport brand involvement reflects fans' interest in, and personal relevance to, sport brands (Havitz & Dimanche,1997; Inoue et al., 2017; Laurent & Kapferer, 1985); this concept aligns well with a tenet of TSSR concerning how consumers' connections and relevance to sport brands influence their well-being.

Attachment Theory and COVID-19

We take attachment theory as our main theoretical framework, through the lens of TSSR, to explain how fans' sport brand involvement fosters positive evaluations of and a sense of connection with brands to enhance psychological well-being. Bowlby (1969) proposed attachment theory to describe an inherent behavioral system that satisfies basic human needs for safety and security. The theory suggests that individuals have an innate need to form close social bonds with other people (e.g., Huang et al., 2015), places (Styvén et al., 2020), or brands (e.g., Japutra et al., 2019). Such affective bonds are also observed in fan–team/–athlete relationships, as indicated by fans' involvement with their preferred sport brand and resultant behavioral loyalty (Dwyer et al., 2015; Kunkel et al., 2014). COVID-19 has only reinforced individuals' need for attachment. Accordingly, we applied attachment theory to assess individuals' reactions to various pandemic-induced situations (e.g., Lozano et al., 2021; Wang et al., 2021). For example, Khan et al. (2021) demonstrated how attachment insecurity increased the effects of social distancing on psychological distress.

As sport fans navigate the pandemic, restrictions on social participation have heightened their need for attachment (Steele, 2020). Sport brands embody a central attachment object for individuals (Inoue et al., 2017); therefore, fans who were highly involved with a sport brand prior to the pandemic will presumably pay more attention to how the brand is managing the impacts of COVID-19. In this regard, sport brands could play a transformative role in fans' well-being through creating shared value that affords fans a sense of "we-ness." Drawing on attachment theory, this study extends previous research on individuals' sense of belonging within fan communities (Behrens & Uhrich, 2020) and the value that sport fans derive from fan-to-fan

relationships (Horbel et al., 2016; Woratschek et al., 2018). In particular, we seek to uncover how a sense of togetherness can be attributed to fan-to-brand attachment.

Sport Brands' Responses to COVID-19 and Fans' Psychological Well-being

Sport brands' responses to the pandemic reflect their brand philosophy and core values (He & Harris, 2020). To effectively combat a public health crisis, sport brands must consider their stakeholders (e.g., employees, players, residents, sponsors)—most particularly fans—as these parties are central to brands' success (Biscaia et al., 2018; Inoue et al., 2021). Some organizations' initial crisis responses entailed financial and operational concerns (Weston, 2021). Other sport brands have also been widely involved in campaigns to create shared value that benefits the fan community and beyond (Inoue et al., 2021). For example, Chelsea Football Club assisted the UK's National Health Service by offering the Club's Millennium Hotel as accommodation for staff working to combat COVID-19 (BBC, 2020). This decision helped to address societal needs created by the pandemic (i.e., to support healthcare professionals) while enhancing the Club's brand image. These types of crisis responses exemplify the concept of creating shared value (CSV), a long-term sustainable business philosophy that supports advancing both social and economic conditions in the communities where a company operates (Porter & Kramer, 2011). In this regard, CSV supports the TSSR-advocated idea that sport organizations can act as critical agents in promoting consumers' well-being (Wu et al., 2020).

Similarly, sport brands have been using social media to amplify their crisis management impact (Sharpe et al., 2020). Brands are sending out social and civic responsibility messaging, promoting fundraising and physical activity challenges, and disseminating empowering content. For example, the Seattle Storm tweeted in December 2020 to promote an app (WA Notify) for COVID-19 exposure notifications, saying: "Get the new mobile tool to help stop the spread of

COVID-19: WA Notify. Plus, keep masking, distancing, and keeping gatherings small – we'll get through this together." Such organizational responses imply an intent among some sport brands to create a sense of togetherness and shared value. The NBA Together campaign (Martin, 2020) offers another example, aiming to build a global community and encourage social engagement to support, educate, and inspire youth, families, and fans in response to COVID-19. Although the pandemic has limited fans' face-to-face interaction with sport brands, organizations' responses have cultivated a sense of "we-ness" among fans (Popp & Woratschek, 2016). The bonding fans achieve through sport brand communities (Fenton et al., 2020; Horbel et al., 2016; Woratschek et al., 2018) and the broader community (Behrens & Uhrich, 2020; Kerwin et al., 2015) can likely satisfy their need for attachment while benefiting both parties (i.e., fans and sport brands).

Hypothesis Development

Individuals may experience negative and positive well-being states simultaneously during a crisis (Fredrickson et al., 2003). In this research, we focus on two COVID-19-induced states—perceived emptiness and hope—to provide a comprehensive understanding of fans' well-being. These two psychological states are tied to individuals' need for attachment (Blake & Norton, 2014; Le Penne, 2017). Emptiness is defined as a sense of purposeless due to boredom and social alienation (Steger, 2017). Hope refers to a positive motivational state that encompasses one's belief that the future will be better than the present, along with the confidence that individuals have the power to make that happen (Snyder et al., 2002). Limited social interaction during a pandemic, coupled with a sense of uncertainty and ever-changing social policies, may lead to feelings of emptiness (Selman et al., 2020). Yet people can also maintain hope for the future given faith that the current adversity is temporary—particularly if social agents, such as

individuals' preferred sport brands, are responsibly managing the crisis for the betterment of society (He & Harris, 2020). In this research, we propose that sport brand involvement can buffer feelings of emptiness and foster hope; that is, sport brands can provide fans a secure sense of attachment by demonstrating favorable crisis management measures and a sense of togetherness.

Sport Brand Involvement and Psychological Well-being

Consumer involvement with an event or brand is usually defined as one's interest in and personal significance toward it (Havitz & Dimanche,1997; Inoue et al., 2017; Laurent & Kapferer, 1985). Building on this definition, sport brand involvement refers to fans' psychological connection with their preferred team or athlete brand (Inoue et al., 2017); it captures the hedonic value people obtain from associating with a sport brand (i.e., pleasure), the brand's key role in people's lives (i.e., centrality), and the symbolic value the brand provides when people express their self-identity (i.e., sign) (Inoue et al., 2017; Su & Kunkel, 2019). Based on a sport brand's capacity to assume a central place in fans' lives and to deliver hedonic and symbolic values, fans' brand involvement could help them cope with COVID-19-related stressors and reinforce their positivity. This logic is rooted in attachment theory, suggesting that when fans' need for attachment is satisfied hedonically (e.g., through entertainment and symbolic value such as vicarious pride), their psychological well-being will increase (Dwyer et al., 2015).

For example, highly involved fans can turn to fan communities (Kennedy & Kennedy, 2020), connect with a team or players via social media (Su et al., 2020), or watch past games (Hull & Romney, 2020) and player highlights to compensate for a lack of social activity during the pandemic. From a TSSR standpoint, these interactions with a sport brand can greatly influence fans' well-being (Inoue et al., 2020). Individuals are also naturally inclined to use

consumption as a coping strategy to improve their emotional state and relieve negative feelings (Suzuki et al., 2019). In a commentary, Majumdar and Nahab (2020) explored how fans have become creative broadcasters during COVID-19. The authors' discussion implied that fans' team involvement could be a source of empowerment; in other words, involvement with a sport brand could help fans feel less empty and more hopeful. We thus propose an inverse relationship between fans' sport brand involvement and emptiness, whereas a positive relationship is expected between fans' sport brand involvement and hope:

H1: Sport brand involvement negatively influences fans' perceived emptiness.

H2: Sport brand involvement positively influences fans' perceived hope.

Mediating Effects of Crisis Management Performance and Perceived Togetherness

We further suggest that the relationships between sport brand involvement and both well-being outcomes (i.e., perceived emptiness and hope) are mediated by fans' perceptions of sport brands' responses to COVID-19. Drawing on attachment theory, we anticipate that fans' involvement with a sport brand will affect their perceptions of the brand's response to COVID-19. As mentioned, the pandemic has heightened one's need for attachment. Highly involved fans will be especially appreciative of what sport brands have done to manage the crisis. Additionally, these fans are more likely to develop a sense of "we-ness" with their preferred sport brand and to connect more closely with their desired attachment figure. We examined fans' evaluations of, and reactions to, sport brands' responsive strategies through two context-specific constructs: crisis management performance and perceived togetherness. This investigation is in line with Inoue et al.'s (2015) examination of the parallel mediating effects of teams' instrumental and emotional support in a post-disaster context.

Crisis management performance

Following Christensen et al. (2016), crisis management performance refers to fans' assessments of sport brands' efforts to address COVID-19-related challenges. Sport brands develop crisis management strategies aligned with their brand philosophy and value position (Inoue et al., 2021; Pittman & Sheehan, 2020) in an attempt to address business and social demands (Wu et al., 2020). Studies have shown that fans' evaluative processes related to sport brands are largely determined by personal brand involvement (Kunkel et al., 2014) and often lead to psychological and behavioral outcomes. More specifically, driven by a need for attachment, highly involved fans are more likely to readily perceive sport brands' responsive strategies as meaningful and positive. These perceptions can then have a downstream effect on fans' well-being.

According to attachment theory, individuals tend to become closely bonded to a desired object to attain a stable and secure psychological state (Strand, 2020). Involved fans are likely to have greater access to brand-provided information on crisis management strategies or to brand policies publicized via different media sources and brand communities (Sharpe et al., 2020). Accordingly, these fans' perceptions of brands' efforts become more positive. When crisis management practices are transparent and reflect firms' responsibility toward broader societal good, fans perceive themselves as benefiting from the shared value created by sport brands (Menghwar & Daood, 2021). Fans' sense of emptiness will therefore be alleviated due to an awareness of these brands' meaningful work (Raub & Blunschi, 2014). Positive perceptions of crisis management (e.g., the team is doing appropriate work to prevent the spread of COVID-19 among players and the local community) can also lead sport fans to believe that the consequences of the pandemic are well-controlled, engendering a stronger sense of hope. The following hypotheses are proposed accordingly:

H3: Sport brands' crisis management performance mediates the negative effect of brand involvement on fans' perceived emptiness.

H4: Sport brands' crisis management performance mediates the positive effect of brand involvement on fans' perceived hope.

Perceived togetherness

Perceived togetherness refers to a sense of shared experience, camaraderie, belonging, and grouping that people develop through their involvement with a brand and its followers (Pynnönen et al., 2018). This concept emphasizes the companionship a humanizing brand offers (Filo et al., 2018) and varies from other constructs describing fan–team relationships (e.g., team identification and self-brand connection) in terms of in-group and out-group differences (Lock & Heere, 2017; Kunkel et al., 2020). Amid the pandemic, some fans may perceive their favorite sport brands as partners in addressing COVID-19-induced challenges. Perceived togetherness captures fans' perceived mutual support and shared responsibility with their preferred sport brands (Pynnönen et al., 2018). This humanizing perspective aligns with attachment theory, which posits that fans can perceive sport brands as a bonding subject from which they derive emotional support (Grisaffe & Nguyen, 2011).

The importance of perceived togetherness has been stressed in multiple crisis contexts, including financial crises (Ervasti et al., 2019) and natural disasters (Imperiale & Vanclay, 2016). In Inoue et al.'s (2015) study of soccer fans affected by an earthquake, fans were more likely to turn to their hometown team for emotional support as their psychological connection with the team increased. The same rationale may apply to sport fans during the pandemic; some sport brands sought to offer fans intangible emotional support by expressing compassion through

their actions (e.g., reaching out to those affected) and general communications (e.g., posting encouraging video messages) (Cole, 2020).

Attachment theory also points to positive well-being outcomes from satisfying the need for security derived from solidarity and togetherness (Dionísio et al., 2008). We therefore propose that perceived togetherness mediates the relationship between sport brand involvement and psychological well-being. The centrality of a sport brand in one's daily life correlates with the perceived sense of unity fans develop with the team (Mastromartino & Zhang, 2020); that is, highly involved fans tend to be more attuned to this sense of togetherness than casual sport viewers. Moreover, Pynnönen et al. (2018) noted a positive downstream effect of perceived togetherness on consumers' well-being. Attachment theory further suggests that external uncertainty heightens the need for attachment due to individuals' control-seeking tendency; meanwhile, relatedness with others enables people to believe that their circumstances are under control (Strand, 2020). An elevated level of perceived togetherness is thus likely to mitigate fans' feelings of emptiness that arise from pandemic-induced social disconnection. In addition, hope is a product of increased awareness of perceived togetherness (Nyman et al., 2012). The following hypotheses are hence proposed:

H5: Perceived togetherness mediates the negative effect of sport brand involvement on fans' perceived emptiness.

H6: Perceived togetherness mediates the positive effect of sport brand involvement on fans' perceived hope.

Methods

Contextual Setting and the Bayesian Approach

Addressing the call for a balance of continuity and novelty in sport management studies (Doherty, 2013), this research adopts a Bayesian approach to test the hypotheses, acknowledging the current understanding of sport consumers' well-being in a crisis context. In contrast to covariance-based SEM, Bayesian SEM allows current states of knowledge to be included as priors (Kaplan, 2014). Three types of prior knowledge can be collected, which are then formalized as prior distributions: informative priors (priorities inferred from existing literature in the same or similar contexts); non-informative priors (researchers possess no statistical predictions about the proposed model); and subjective priors (researchers derive knowledge from experts' input rather than literature-based inferences) (Van de Schoot et al., 2014). Notably, informative priors do not need to include identical variables obtained through similar measures as the data of interest (Baker et al., 2020; Zondervan-Zwijnenburg et al., 2017). Given a related research context (i.e., well-being during a crisis), we used parameters estimated from Inoue et al. (2015) to form and specify distributions of informative priors in our Bayesian analysis.

As we incorporated prior knowledge into empirical Bayesian models, the effects of unique situational factors were taken as control variables in our context. Focal factors, identified through a review of recent studies on sport and individual well-being during COVID-19 (e.g., King et al., 2020; Maugeri et al., 2020), included consumers' demographics (e.g., income and age), sport consumption patterns (e.g., eSport games consumption and outdoor sport activities), and emotions (e.g., anxiety and depression). We used machine learning techniques to select the most relevant covariates to optimize a balance between the predictive power and parsimoniousness of the empirical model. Accordingly, we adopted a holistic approach to examine influential forces on sport consumers' well-being. Combining Bayesian and machine

learning ensured methodological rigor and promoted theoretical advances in our understanding of sport consumers' well-being.

Data Collection and Measures

Data were gathered over 5 days via a Chinese crowdsourcing platform (Wenjuanxing) after the national lockdown was lifted in April 2020 (Feng, 2020). Wenjuanxing is the largest professional platform for online surveys in China, established in 2006 with more than 2.6 million sample sources (He et al., 2018). Participants received a monetary reward of 8 RMB (approximately 1 US dollar) upon completing the questionnaire. Participants were asked to identify their physical location when responding to the online survey. Their IP addresses were recorded to avoid multiple responses from a single participant. Ten participants were removed from the sample because they did not physically reside in China during the COVID-19 pandemic, resulting in a total of 770 qualified respondents from 30 provincial administrative units. The final sample consisted of 71% men. On average, participants were 30 years old, and 80% held at least an undergraduate degree.

We adapted multiple-item measures to assess focal psychological constructs from previous research. Sport brand involvement (SBI) was measured using nine items adopted from Doyle et al. (2013): sign (SIG), based on three items, was operationalized as perceptual, symbolic values associated with following a favorite team or athlete brand ($\alpha = 0.83$); three indicators measured pleasure (PLE), the hedonic benefits individuals received from following their favorite team or athlete brand ($\alpha = 0.90$); centrality (CEN), indicating how crucial following one's favorite sport teams or athletes was in a respondent's life, was measured using three items ($\alpha = 0.86$).

Crisis management performance (CMP) was operationalized with three items adapted from Gladden and Funk (2001) to gauge fans' evaluations of sport brands' COVID-19 responses. Three items to measure perceived togetherness (PT) were adapted from Pynnönen et al. (2018) to assess the extent to which participants perceived their preferred sport brands as working with them to address pandemic-induced challenges. All the above constructs were scored on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). For the two well-being outcomes, emptiness (EMP) was measured using three items adapted from Su et al. (2019) to capture signs of depression and a sense of aimlessness after being socially isolated due to COVID-19 lockdowns. Hope was measured with three items to gauge the degree to which an individual had a positive outlook about the future, adapted from Snyder et al. (1996). Both constructs were assessed using a 7-point Likert-type scale ranging from 1 = *never feel that* to 7 = *feel that all the time*.

Lastly, a list of control variables was included to capture an array of sociodemographic, psychological, and behavioral metrics thought to influence psychological well-being. These measures consisted of age (AGE), gender (GEN), education (EDU), and income (INC) to depict a participant's demographic profile. We also developed a list of popular communication channels that sport brands use to engage with their fans in China, such as Weibo, WeChat, online BBS forums, a virtual fan community (FanGroup), and TikTok. Respondents were asked to indicate how often they chose various means to compensate for the lack of sport events during the pandemic. Alternatives consisted of watching rebroadcasted classic sport games and highlights from old games (OG), participating in online fan communities (OFC), playing sport-based and non-sport-based eSports games (SB-eSports & NSB-eSports), performing outdoor sport activities (OSA), maintaining fitness at home (AHF), and consuming other entertainment media (e.g.,

podcasts and sport documentaries) (POD) (Su et al., 2020; Walker et al., 2017). Additional behavioral metrics and related psychographics included the relationship between respondents and their favorite sport brand (REL), their frequency of sport game consumption prior to the lockdown (PREFRE), pre-pandemic spending on sport content in RMB (PRESP), percent changes in payment for a sport-based content subscription once the lockdown was lifted (CINSP), overall fandom toward one's preferred sport team or athlete brand (FAN), and willingness to pay to maintain sport-based media content subscriptions during the pandemic (WTP).

Model Selection with Machine Learning

Three machine-learning-based algorithms were executed in Python 3.8. The goal was to select an optimal set of control variables combined with the aforementioned exogenous and endogenous constructs to maximize predictive power while improving the parsimony of the global model (Ng, 1998). First, we employed recursive feature elimination (RFE) with a random forest classifier to determine the number of control variables. Then, we used Lasso regularization to determine the importance of each control variable in relation to emptiness and hope. In both machine learning models, we used a 70–30 split to form training and testing datasets to justify prediction accuracy. Finally, a filter method using the fast correlation-based algorithm (FCBF) (Yu & Liu, 2003) was employed to calculate symmetrical uncertainty scores for the retained controls. This approach provided the most parsimonious solutions based on previous simulation studies and was thus deemed appropriate to corroborate the robustness of our model selection results (Yu & Liu, 2003). We used the retained list of controls as a final model frame for subsequent Bayesian structural mediation analysis.

Instrument Validation

Prior to testing the proposed structural mediation model using Bayesian analysis, global confirmatory factor analysis (CFA) with maximum likelihood estimation and robust standard errors was conducted in Mplus 7.4 (Muthén & Muthén, 2017) to assess construct validity. Factorial validity and internal consistency were evaluated based on composite reliability scores, the average variance extracted (AVE), and the heterotrait-monotrait ratio (HTMT) (Henseler et al., 2015). We employed multiple procedural strategies to control for common method biases. First, the research team further cross-validated and refined the content validity of measurement items adapted from established instruments to minimize potential method biases caused by ambiguity (Kharouf et al., 2020). Second, survey items were randomized as a priori method to control for possible item-order effects (Yoshida et al., 2018). Different Likert-type scale response anchors were also adapted to minimize common-scale-property–induced method biases between Likert-type scales of sport brand–related constructs and the equivalents of endogenous well-being outcomes. In addition to these procedural strategies, we carried out Harman's single-method factor test as a post-hoc remedy to address the extent to which our findings were susceptible to common method bias (Podsakoff et al., 2012).

Bayesian Structural Mediation Analysis

Bayesian structural mediation analysis was performed in Mplus. The Bayesian approach is appropriate when incorporating prior knowledge into empirical estimation within social and behavioral science disciplines (Rupp et al., 2004). Using conjugate priors obtained from earlier studies and likelihood functions derived from the current data, this method has the analytical capacity to return point estimates situated in predicted posterior distributions with tighter narrower credible intervals (Baker et al., 2020). In addition to its ability to include and reflect the results of previous empirical studies, Bayesian SEM provides advantages over its counterpart,

covariance-based SEM. This approach provides a robust analytical framework to accommodate complex model structures that are less computationally expensive and do not require the assumption of multinormality. The results are also less susceptible to outliers and missing values and can be mathematically consistent with maximum likelihood estimation if non-informative priors (e.g., uniform distributions) are specified (Asparouhov & Muthén, 2011).

Given a consistent research context, we used parameters estimated from Inoue et al. (2015)[1] to develop and specify distributions of informative priors in Bayesian analysis. We followed recommendations to specify prior variances four times wider than those reported in the article to account for possible heterogeneity effects in this study (Muthén, 2010). Approximations of posterior distributions for the parameters of main and indirect effects were obtained using 20,000 Markov chain Monte Carlo (MCMC) iterations. Lastly, Bayesian posterior trace plots were generated to confirm the convergence and stability of results prior to final reporting.

Results

Model Selection with Machine Learning

Benefiting from an iterative process involving RFE and Lasso regularization, the mechanisms first extracted control variables that made the most significant contributions to training with each possible combination/subset. We identified the focal latent constructs of SIGN, PLE, CEN, CMP, and PT along with metrics such as BBS, WeChat, FanGroup, TikTok, Weibo, OG, NSB-eSports, OSA, PREFRE, PRESP, CINSP, AGE, INC, FAN, WTP, and REL.

[1] We used unstandardized point estimates and related confidence intervals of main and indirect effects (see Inoue et al., 2015, p. 40) as informative priors. To check the robustness of our findings, we conducted Bayesian structural mediation analysis using non-informative/uniform priors. The goal was to justify how our results were sensitive to this statistical modification, given the underlying assumption that little existing literature was available to configure the distributions of tested relationships in the proposed model. We employed uniform priors on all included parameters, linkages, and residual specifications and assumed diagonal variance-covariance matrices using 20,000 MCMC iterations.

Next, feature importance scores and Lasso coefficients were computed and sorted to rank all included measures, resulting in the elimination of AHF, SB-eSports, POD, OFC, GEN, and EDU based on importance scores and Lasso coefficients near zero. Lastly, the resultant feature set was confirmed using the Stochastic Channel-Based Federated Learning method, and no additional variables had to be removed based on symmetrical uncertainty scores. As demonstrated in Figure 1, the retained 21-variable solution yielded the highest prediction accuracy at 55%. The final set of variables applied in subsequent statistical analyses appears in the correlation heatmap in Figure 1.

[Insert Figure 1 around here]

Instrument Validation

The overall fit of the CFA model was acceptable (Hair et al., 2014): $\chi^2(275.66)/df\,(80) = 3.45$; comparative fit index (CFI) = 0.97; goodness-of-fit index (GFI) = 0.93; Tucker–Lewis index (TLI) = 0.96; root mean square error of approximation (RMSEA) = .055, 95% confidence interval (CI) = [.047, .064]; standardized root mean square residual (SRMR) = .049. Table 2 lists psychometric properties for all constructs. Following the approach suggested by other sport management researchers (Du et al., 2014), sport brand involvement (SBI) was configured as a reflective second-order construct encompassing SIGN, PLE, and CEN based on high correlations among the three dimensions (see Figure 2).

[Insert Figure 2 around here]

All AVE scores were above the benchmark of 0.50, demonstrating adequate convergent validity. Composite reliability scores each exceeded the recommended threshold of 0.70, implying satisfactory construct reliability (see Table 2). Lastly, the square root of the AVE was larger than the respective cross-factor correlations. The HTMT values per construct were also

below the suggested benchmark of 0.85. Taken together, these results demonstrate the constructs' sufficient discriminant validity (Henseler et al., 2015). The results of Harman's single-method factor test indicated that less than 10% of the total variance would have been explained by adding a common latent marker factor. Collectively, this evidence, combined with the preventive measures described in the Instrument Validation section, revealed that common method bias was not a significant concern in the measurement model.

[Insert Table 2 around here]

Bayesian Structural Mediation Analysis

Figure 2 depicts the tested Bayesian structural mediation model. Posterior unstandardized beta coefficients for direct and indirect effects, along with their posterior standard deviations, are presented in Table 3. The *p*-values were assessed using posterior 95% credible intervals and the estimation of the proportion of the posterior distribution that was either above or below zero, contingent upon the sign of the respective point estimate. The pattern of Bayesian posterior trace plots (see Figure 3) demonstrates that the estimation convergence was achieved with 20,000 iterations using MCMC algorithms.

[Insert Figure 3 around here]

Overall, the tested Bayesian structural mediation model demonstrated sound predictive power as evidenced by a large effect size of exogenous variables ranging from 14% to 65% (see Table 3). After accounting for the effects of the identified control variables, sport brand involvement had a significant negative relationship with emptiness (β = - 0.52, [-0.85, -0.19], $p <$ .01); thus, H1 was confirmed. However, sport brand involvement was not directly correlated with hope (β = 0.02, [-0.14, 0.18], p = 0.80). H2 was hence rejected. Results also showed that sport brand involvement had a significant positive impact on crisis management performance (β

= 1.21, [1.11, 1.31], $p < .001$) and perceived togetherness ($\beta = 1.34$, [1.22, 1.46], $p < .001$). Further, perceived togetherness had significant effects on emptiness ($\beta = -0.18$, [-0.34, -0.02], $p < .05$) and hope ($\beta = 0.33$, [0.25, 0.41], $p < .001$), whereas crisis management performance had a nonsignificant association with emptiness ($\beta = -0.15$, [-0.33, 0.03]) but a significant positive nexus with hope ($\beta = 0.45$, [0.37, 0.53], $p < .001$). Lastly, three of the four proposed mediation pathways showed significant mediating effects from sport brand involvement to the two psychological well-being outcomes. Specifically, the indirect effects of sport brand involvement → crisis management performance → emptiness was not significant ($\beta = -0.18$, [-0.40, 0.04], $p = .11$). Therefore, H3 was rejected. Furthermore, the indirect effects of sport brand involvement → crisis management performance → hope ($\beta = 0.55$, [0.39, 0.71], $p < .001$) and sport brand involvement → perceived togetherness → hope ($\beta = 0.44$, [0.32, 0.56], $p < .001$) were positive, while the mediation effect of sport brand involvement → perceived togetherness → emptiness ($\beta = -0.24$, [-0.46, -0.02], $p < .05$) was negative. As such, H4, H5, and H6 were supported. The indirect effect of sport brand involvement on emptiness through crisis management performance was negative but not significant ($\beta = -0.18$, [-0.40, 0.04], $p = 0.10$); accordingly, H3 was rejected. Altogether, these results suggest that sport brands can offer promising interventions to promote fans' mental well-being ($R^2_{[HOPE]} = .24$, $R^2_{[EMP]} = .14$) by providing instrumental and emotional support when engaging with fans during the pandemic.

Among the identified control variables, Weibo ($\beta = 0.89$, [0.54, 1.24], $p < .001$), WeChat ($\beta = 1.04$, [0.45, 1.63], $p < .001$), BBS ($\beta = 1.55$, [1.02, 2.08], $p < .001$), TikTok ($\beta = 1.44$, [0.77, 2.11], $p < .001$), performing outdoor sport activities ($\beta = 0.06$, [0.04, 0.08], $p < .001$), sport-based content subscription ($\beta = 0.29$, [0.25, 0.33], $p < .001$), and the relationship between respondents and their favorite sport brand ($\beta = 0.23$, [0.19, 0.27], $p < .001$) were each positively

associated with hope. Conversely, Weibo (β = -2.64, [-4.07, -1.21], p < .001), WeChat (β = -2.72, [-5.09, -0.35], p < .001), BBS forums (β = -2.70, [-4.86, -0.54], p < .001), sport-based content subscription (β = -0.44, [-0.62, -0.26], p < .001), fandom (β = -0.08, [-0.12, -0.04], p < .001), and the relationship between respondents and their favorite sport brand (β = -0.30, [-0.46, -0.14], p < .001) all had a significant negative effect on emptiness. Interestingly, playing non-sport-based eSports games (NSB-eSports) (β = 0.12, [0.08, 0.16], p < .001) and being willing to spend more money on sport media content (WTP) (β = 0.41, [0.35, 0.47], p < .001) had significant positive effects on emptiness.

[Insert Table 3 around here]

Discussion

The COVID-19 pandemic provided a unique context lens to explore the transformative role of sport brands in crisis scenarios. This study builds on the tenets of TSSR and attachment theory, which collectively posit that involvement with sport brands plays a key role in determining fans' well-being by satisfying fans' needs for attachment and security (Blake & Norton, 2014; Inoue et al., 2020). Given the need to study how the sport industry could respond more effectively to COVID-19 (Ruihley & Li, 2020) and to further understand the impacts of sport brands on individuals' well-being in times of crisis (Inoue et al., 2021), the findings of the current research make several meaningful contributions to the literature.

First, we provide empirical evidence on sport brands' roles in delivering transformative benefits to fans by identifying how sport brand involvement is associated with positive (hope) and negative (emptiness) psychological well-being. Findings indicated that positive and negative well-being outcomes differentially affect mental health (e.g., depressive symptoms). Therefore, results showing how sport brands can contribute to each of these positive/negative outcomes

advances the societal importance of sport brands in times of crisis. Our findings also shed light on how fans react to a sport brand in a crisis when the brand is perceived as an attachment object. Consistent with TSSR scholarship on the relationship between fans' psychological connection to brands and well-being (Inoue et al., 2020), the current study revealed that fans' involvement with sport brands could mitigate perceived emptiness and promote hope. Our results also extend Inoue et al.'s (2015) post-disaster study focusing on collective well-being by examining how sport brands contribute to well-being outcomes on an individual level. The outcomes of our tested Bayesian models demonstrate that sport brand involvement serves as a robust and theoretically bounded determinant of fans' well-being status. These results empirically support the idea that brands should provide superior value offers for their customers (Kumar, 2018) and enrich knowledge of TSSR (Inoue et al., 2020) by underscoring sport brand involvement as a key antecedent of sport consumers' well-being. Our results further suggest that the bond between fans and sport brands is built upon shared value created by sport brands' responses to crisis (COVID-19 in this case). In light of this perspective, our study suggests that the relationship between fans and sport brands is a two-way street: fans enhance sport brands' financial and reputational health through their involvement over time (Kunkel & Biscaia, 2020), while brands contribute to fans' psychological well-being through various facets. These mutual advantages highlight the importance of sport brands in contemporary society and substantiate the role of reciprocity in managing sustainable brand–fan relationships (Lee et al., 2019). That is, sport brands should aspire to create value from and to fans. As such, we contribute to extant research on sport communities by describing how sport brands can co-create value with fans when inter-person interaction is limited.

Second, the current results provide a fine-grained understanding of the underlying mechanisms (i.e., crisis management performance and perceived togetherness) through which sport brand involvement leads to desirable well-being outcomes among sport consumers. In line with attachment theory (Steele, 2020), fans' innate tendency to establish attachment bonds with their favorite sport brands during uncertain times prompts them to positively appraise sport brands' crisis management performance and develop a sense of togetherness. We found that fans' involvement with sport brands had a direct negative association with emptiness, and this relationship was partially mediated by perceived togetherness but not by crisis management performance. This pattern indicates that feelings of emptiness can only be alleviated when the emotional attachment between sport brands and fans gives rise to a sense of togetherness. Echoing attachment theory, these results highlight the importance of emotional bonds with others (i.e., sport brands) in attaining actual or perceived security and protection (Strand, 2020).

Regarding fans' perceptions of hope, the full mediating roles of sport brands' crisis management performance and perceived togetherness in connecting sport brand involvement and hope imply that involvement is necessary but not sufficient to activate fans' sense of hope. The result suggests that hope is stimulated only if a brand diligently and responsibly handles a crisis (e.g., the COVID-19 pandemic) with a long-term vision and cultivates unity. There is an increasing demand for brands to engage in transformational processes to create shared value (Menghwar & Daood, 2021). Our research extends previous sport branding studies that were often based on marketing-driven approaches (Biscaia et al., 2013; Kunkel et al., 2014) by examining how these brands may benefit fans. Our findings are also consistent with studies on crisis management performance (Christensen et al., 2016) and perceived togetherness in non-

sport brand contexts (Pynnönen et al., 2018), which parallel perceived instrumental and emotional support in crisis research (Inoue et al., 2015).

Lastly, by integrating model selection with machine learning, results based on our chosen control variables suggest a deeper role of sport brand involvement in fans' psychological well-being (Silva et al., 2020). In particular, individuals who spent more time on their favorite sport brands' social media platforms, safely engaged in outdoor recreational activities while adhering to social distancing guidelines, invested more money in sport-based subscription content during lockdown, and romanticized their relationships with their favorite sport brands appeared more likely to feel hopeful about the future. Our findings also imply that fans who watched more sport content and engaged with their preferred team or athlete brands on social media were more likely to experience less emptiness and depression during the pandemic. These trends convey the importance of sport brands nurturing relationships with fans and providing multiple relationship touchpoints (Lee et al., 2019). Finally, our results empirically align with rising concerns about the negative impacts of eSports on an individual's well-being (Wattanapisit et al., 2020), given that indulging in non-sport-related eSports games can lead to a sense of meaninglessness during COVID-19.

Managerial Implications, Limitations, and Future Research

Although this study focused on COVID-19, the implications of our findings extend beyond this context to other future crises that could affect sport brands and fans alike. As perceptions of crisis management performance are essential in bolstering hope, sport brands should promote actions taken to support their fans and community while avoiding information overload. Effective communication can improve the brand experience because people often apply acquired knowledge to make self-relevant inferences (Kharouf et al., 2020). In addition,

staying up to date on a brand's positive practices can help fans feel more connected and evoke a sense of togetherness. Sport brands should therefore invest in various web platforms (e.g., Twitter, TikTok, and Fan Forum) to offer multiple touchpoints and levels of interaction with fans, which can benefit sport consumers' psychological well-being.

This study also provides an alternative view of the relationship between sport brands and their fans: namely, sport brands have a profound impact on fans beyond on-field performance. Despite an absence of competition and entertainment, fans' involvement with sport brands can serve as a coping strategy when consumers are facing challenging times (Doyle et al., 2013). Sport brands should thus recognize the transformative power of "we" beneath the surface of fans' continued support and associated economic benefits. This study reveals that sport brands can carve out a sense of "we" without being bounded by in-person interaction. In essence, the current findings extend fan community research emphasizing fan-to-fan interaction (Katz et al., 2020) by highlighting that building togetherness between sport brands and fans could require attempts to cultivate shared value. In addition to choosing one-off causes to support, sport brands (e.g., teams, athletes, and leagues) should adopt a CSV approach by designing programs that simultaneously benefit fans and their own brand over time. The Boston Celtics unveiled a $25 million, 10-year plan to combat racial injustice with efforts ranging from criminal justice and law enforcement, economic opportunity, and equity in health care that are particularly tied to COVID-19 (The Associated Press, 2020). As Celtics player Jaylen Brown said, "Monetary commitment is a great first step, but we need to commit to this process by creating a balance of short- and long-term change. The time is now." This initiative embodies the core of CSV for sport organizations (Wu et al., 2020) that supports sustainable business strategies, engaging fans and sport brands to emerge from this pandemic as a stronger community.

Certain limitations of this study illuminate fertile avenues for future research. First, despite the cost-effectiveness, timeliness, efficiency, and flexibility of online crowdsourcing platforms (Miller et al., 2017), these platforms present constraints to data collection. The lack of attention filters and limited generalizability based on our non-representative provincial sample pool, along with consequently attenuated effect sizes and reduced statistical power, must be acknowledged (Kraemer et al., 2017). Moreover, we only gathered data from one country, which further limits the generalizability of our results. Future investigations could consider sport brands' transformative roles in engaging communities more effectively during and after COVID-19 in various countries using iterative sampling techniques to capture the dynamic nature of the pandemic and its corresponding changes to the sport consumer landscape.

Second, we assessed fans' well-being by focusing on hope and emptiness. Although the results provide useful insight for sport brands, scholars could later broaden the conceptualization of fans' well-being by measuring all physical, psychological, and social domains of well-being (Inoue, Berg, & Chelladurai, 2015) to obtain a comprehensive view of how sport brands can foster shared value creation and recover from crisis. Moreover, our R^2 results indicated that a substantial portion of hope and emptiness has yet to be explained. Future studies could incorporate other variables (e.g., relationship quality and the perceived authenticity of sport brands) or qualitatively assess fans' responses to sport brands to better explore disparities in fans' well-being across sport types.

Finally, Bayesian analysis is not without limitations based on prior specifications, which could influence the convergence and estimations of posterior predictive distributions (Kaplan, 2014). Drawing upon a body of literature on fans' well-being, researchers could meta-analyze factors influencing the relationship between transformative sport services and fans' well-being to

adjust informative priors and further confirm the sensitivity and robustness of our results. Follow-up qualitative research should also be conducted to demonstrate how and why sport brands and related humanitarian interventional programs can help to mitigate anticipated and unintended mental health consequences among the general public, with a particular focus on vulnerable groups.

To conclude, our work highlights the importance of sport brands' involvement and building a "we" between these brands and fans amid COVID-19. Underlying this sense of "we" is the notion of shared responsibility that transforms the connection between brands and fans (Gallager & Tollefsen, 2019). From sport brands' perspectives, fostering fans' perceptions of togetherness is conducive to a "win-win" solution for business and society and ultimately aligns with the tenets of CSV (de los Reyes et al., 2017). From fans' points of view, the notion of "we" is grounded in their involvement with sport brands that expands beyond brands' performance on the field (Yoshida et al., 2015). The role of "we" in unifying sport brands and fans—and in driving transformative benefits delivered by brands—demonstrates that the enduring CSV perspective is pertinent in these trying times and should be studied in future TSSR scholarship.

References

Anderson, L., & Ostrom, A. L. (2015). Transformative service research advancing our knowledge about service and well-being. *Journal of Service Research*, *18*(3), 243–249. https://doi.org/10.1177/1094670515591316

Anderson, L., Ostrom, A. L., Corus, C., Fisk, R. P., Gallan, A. S., Giraldo, M., Mende, M., Mulder, M., Rayburn, S. W., Rosenbaum, M. S., Shirahada, K. & Williams, J. D. (2013). Transformative service research: An agenda for the future. *Journal of Business Research*, *66*(8), 1203-1210. https://doi.org/10.1016/j.jbusres.2012.08.013

Asparouhov, T., & Muthén, B. O. (2011). Using Bayesian priors for more flexible latent class analysis. *In JSM Proceedings, Government Statistics Section* (pp. 4979– 4993). Alexandria, VA: American Statistical Association.

Baker, B. J., Du, J., Sato, M., & Funk, D. C. (2020). Rethinking segmentation within the psychological continuum model using Bayesian analysis. *Sport Management Review*, *23*(4), 764-775. https://doi.org/10.1016/j.smr.2019.09.003

BBC (2020, March 18). *Coronavirus: Chelsea FC offers hotel to NHS staff*. https://www.bbc.com/news/uk-england-london-51942190

Behrens, A., & Uhrich, S. (2020). Uniting a sport teams' global fan community: prototypical behavior of satellite fans enhances local fans' attitudes and perceptions of groupness. *European Sport Management Quarterly*, *20*(5), 598-617.

Biscaia, R., Correia, A., Ross, S., Rosado, A., & Marôco, J. (2013). Spectator-based brand equity in professional soccer. *Sport Marketing Quarterly, 22*(1), 20–32.

Biscaia, R., Hedlund, D., Naylor, M., & Dickson, J. (2018). Conceptualising and measuring fan identity using stakeholder theory. *European Sport Management Quarterly, 18*(4), 459-481.

Blake, J., & Norton, C. L. (2014). Examining the relationship between hope and attachment: A meta-analysis. *Psychology, 5*(6), 556–565. https://doi.org/10.4236/psych.2014.56065

Bowlby, J. (1969). *Attachment and loss v. 3* (Vol. 1). Random House.

Bundesliga (2021). *Bayern Munich's Robert Lewandowski donates 1 million Euros to combat coronavirus pandemic*. https://www.bundesliga.com/en/bundesliga/news/bayern-munich-s-robert-lewandowski-donates-1-million-euro-combat-coronavirus-10642

Christensen, T., Lægreid, P., & Rykkja, L. H. (2016). Organizing for crisis management: Building governance capacity and legitimacy. *Public Administration Review*, *76*(6), 887-897.

Cole, S. (2020). Coronavirus: How are sports brands responding on social media? *Econsultancy* https://econsultancy.com/coronavirus-covid19-sports-brand-responses-social-media/

de los Reyes Jr, G., Scholz, M., & Smith, N. C. (2017). Beyond the "Win-Win" creating shared value requires ethical frameworks. *California Management Review*, *59*(2), 142-167. https://doi.org/10.1177/0008125617695286

Dionísio, P., Leal, C., & Moutinho, L. (2008). Fandom affiliation and tribal behaviour: a sports marketing application. *Qualitative Market Research: An International Journal*, *11*(1), 17-39. https://doi.org/10.1108/13522750810845531

Doherty, A. (2013). Investing in sport management: The value of good theory. *Sport Management Review*, *16*(1), 5-11. https://doi.org/10.1016/j.smr.2011.12.006

Doyle, J. P., Filo, K., Lock, D., Funk, D. C., & McDonald, H. (2016). Exploring PERMA in spectator sport: Applying positive psychology to examine the individual-level benefits of

sport consumption. *Sport Management Review*, *19*(5), 506-519. https://doi.org/10.1016/j.smr.2016.04.007

Doyle, J.P., Kunkel, T., & Funk, D.C. (2013). Sport spectator segmentation: Examining the differing psychological connections amongst spectators of leagues and teams. *International Journal of Sports Marketing and Sponsorship*, *14*(2), 95-111. http://dx.doi.org/10.2139/ssrn.2456983

Du, J., Sato, M., Funk, D. C., Jordan, J. S., James, J.D., & Zhang, J. J. (2014, May). *Construct Measurement and Model Specification in Sport Management Research: A Philosophical and Methodological Discussion on Reflective and Formative Structures*. Paper presented at the North American Society for Sport Management (NASSM), North American Society for Sport Management (NASSM), Pittsburgh, Pennsylvania. https://www.nassm.org/files/conf_abstracts/2014-287.pdf

Dwyer, B., Mudrick, M., Greenhalgh, G. P., LeCrom, C. W., & Drayer, J. (2015). The tie that blinds? Developing and validating a scale to measure emotional attachment to a sport team. *Sport Management Review*, *18*(4), 570-582.

Ervasti, H., Kouvo, A., & Venetoklis, T. (2019). Social and institutional trust in times of crisis: Greece, 2002–2011. *Social Indicators Research*, *141*(3), 1207-1231. https://doi.org/10.1007/s11205-018-1862-y

Feng, E. (2020, April 25). China lifts lockdown, but strict controls still curb residents. *NPR*. https://www.npr.org/2020/04/25/844904648/china-lifts-lockdown-but-strict-controls-still-curb-residents

Fenton, A., Keegan, B., & Parry, K. (2020). Understanding sporting social media brand communities, place and social capital–a netnography of football fans. *Communication and Sport*. https://doi.org/10.1177/2167479520986149

Filo, K., Lock, D., Sherry, E., & Quang Huynh, H. (2018). 'You belonged to something': Exploring how fundraising teams add to the social leverage of events. *European Sport Management Quarterly*, *18*(2), 216-236.

Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crisis? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology*, *84*(2), 365-376. http://dx.doi.org/10.1037/0022-3514.84.2.365

Gallan, A. S., McColl-Kennedy, J. R., Barakshina, T., Figueiredo, B., Jefferies, J. G., Gollnhofer, J., Hibbert, S., Luca, N., Roy, S., Spanjol, J., & Winklhofer, H. (2019). Transforming community well-being through patients' lived experiences. *Journal of Business Research*, *100*, 376–391. https://doi.org/10.1016/j.jbusres.2018.12.029

Gladden, J. M., & Funk, D. C. (2001). Understanding brand loyalty in professional sport: Examining the link between brand associations and brand loyalty. *International journal of sports marketing and sponsorship*, *3*(2), 67-91.

Grisaffe, D. B., & Nguyen, H. P. (2011). Antecedents of emotional attachment to brands. *Journal of Business Research*, *64*(10), 1052-1059.

Havitz, M. E., & Dimanche, F. (1997). Leisure involvement revisited: Conceptual conundrums and measurement advances. *Journal of Leisure Research*, *29*(3), 245-278.

Hair, J. F., Gabriel, M., & Patel, V. (2014). AMOS covariance-based structural equation modeling (CB-SEM): Guidelines on its application as a marketing research tool. *Brazilian Journal of Marketing*, *13*(2).

He, H., & Harris, L. (2020). The impact of Covid-19 pandemic on corporate social responsibility and marketing philosophy. *Journal of Business Research*, *116*, 176-182.

He, X., Zhan, W., & Hu, Y. (2018). Consumer purchase intention of electric vehicles in China: The roles of perception and personality. *Journal of Cleaner Production*, *204*, 1060-1069.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115-135. https://doi.org/10.1016/j.smr.2017.07.002

Horbel, C., Popp, B., Woratschek, H., & Wilson, B. (2016). How context shapes value co-creation: Spectator experience of sport events. *The Service Industries Journal*, *36*(11-12), 510-531.

Huang, Y. A., Lin, C., & Phau, I. (2015). Idol attachment and human brand loyalty. European *Journal of Marketing, 49*(7/8), 1234-1255.

Hull, K., & Romney, M. (2020). Welcome to the Big Leagues: Exploring Rookie Sports Broadcasters' Adjustment to New Careers. *Journalism & Mass Communication Educator,* 1077695820933888. https://doi.org/10.1177/1077695820933888

Imperiale, A. J., & Vanclay, F. (2016). Experiencing local community resilience in action: Learning from post-disaster communities. *Journal of Rural Studies*, *47*, 204-219. https://doi.org/10.1016/j.jrurstud.2016.08.002

Inoue, Y., & Havard, C. (2015). Sport and disaster relief: A content analysis. *Disaster Prevention and Management*, *24*(3), 355-368. http://dx.doi.org/10.1108/DPM-12-2014-0276

Inoue, Y., Berg, B. K., & Chelladurai, P. (2015). Spectator sport and population health: A scoping study. *Journal of Sport Management*, *29*(6), 705–725. https://doi.org/10.1123/jsm.2014-0283

Inoue, Y., Funk, D. C., & McDonald, H. (2017). Predicting behavioral loyalty through corporate social responsibility: The mediating role of involvement and commitment. *Journal of Business Research*, 75, 46-56.

Inoue, Y., Funk, D. C., Wann, D. L., Yoshida, M., & Nakazawa, M. (2015). Team identification and postdisaster social well-being: The mediating role of social support. *Group Dynamics: Theory, Research, and Practice*, *19*(1), 31. https://doi.org/10.1037/gdn0000019

Inoue, Y., Lock, D., Gillooly, L., Shipway, R., & Swanson, S. (2021). The organizational identification and well-being framework: Theorizing about how sport organizations contribute to crisis response and recovery. *Sport Management Review*. https://dx.doi.org/10.1080/14413523.2021.1911496

Inoue, Y., Sato, M., & Filo, K. (2020). Transformative sport service research: Linking sport services with well-Being. *Journal of Sport Management*, *34*(4), 285-290. https://doi.org/10.1123/jsm.2020-0102

Inoue, Y., Sato, M., Filo, K., Du, J., & Funk, D. C. (2017). Sport spectatorship and life satisfaction: A multicountry investigation. *Journal of Sport Management*, *31*(4), 419–432. https://doi.org/10.1123/jsm.2016-0295

Inoue, Y., Wann, D.L., Lock, D., Sato, M., *Moore, C. & Funk, D. C. (2020). Enhancing older adults' sense of belonging and subjective well-being through sport game attendance, team identification, and emotional support. *Journal of Aging and Health, 32* (7/8), 530-542. https://doi.org/10.1177/0898264319835654

Japutra, A., Ekinci, Y., & Simkin, L. (2019). Self-congruence, brand attachment and compulsive buying. *Journal of Business Research*, *99*, 456-463.

Kaplan, D. (2014). *Bayesian statistics for the social sciences.* New York: Guilford Publications.

Katz, M., Mansfield, A. C., & Tyler, B. D. (2020). The strength of fan ties: Emotional support in sport fan egocentric networks. *Journal of Sport Management*, *34*(4), 291–302. https://doi.org/10.1123/jsm.2019-0170

Kennedy, D., & Kennedy, P. (2020). English premier league football clubs during the covid-19 pandemic: business as usual?. *Soccer & Society*, 1-8. https://doi.org/10.1080/14660970.2020.1797498

Kerwin, S., Warner, S., Walker, M., & Stevens, J. (2015). Exploring sense of community among small-scale sport event volunteers. *European Sport Management Quarterly*, *15*(1), 77-92.

Khan, A. G., Kamruzzaman, M., Rahman, M. N., Mahmood, M., & Uddin, M. A. (2021). Quality of life in the COVID-19 outbreak: influence of psychological distress, government strategies, social distancing, and emotional recovery. *Heliyon*, *7*(3), e06407.

Kharouf, H., Biscaia, R., Garcia-Perez, A., & Hickman, E. (2020). Understanding online event experience: The importance of communication, engagement and interaction. *Journal of Business Research*, *121*, 735-746.

King, D. L., Delfabbro, P. H., Billieux, J., & Potenza, M. N. (2020). Problematic online gaming and the COVID-19 pandemic. *Journal of Behavioral Addictions*, *9*(2), 184-186. https://doi.org/10.1556/2006.2020.00016

Kraemer, J. D., Strasser, A. A., Lindblom, E. N., Niaura, R. S., & Mays, D. (2017). Crowdsourced data collection for public health: A comparison with nationally representative, population tobacco use data. *Preventive Medicine*, *102*, 93-99. https://doi.org/10.1016/j.ypmed.2017.07.006

Kumar, V. (2018). Transformative Marketing: The Next 20 Years. *Journal of Marketing, 82*(4), 1-12.

Kunkel, T., & Biscaia, R. (2020). Sport Brands: Brand Relationships and Consumer Behavior. *Sport Marketing Quarterly*, *29*(1), 3-17 https://dx.doi.org/10.32731/SMQ.291.032020.01

Kunkel, T., Biscaia, R., Arai, A., & Agyemang, K. (2020). The role of self-brand connection on the relationship between athlete brand image and fan outcomes. *Journal of Sport Management*, *34*(3), 201-216.

Kunkel, T., Funk, D., & King, C. (2014). Developing a conceptual understanding of consumer-based league brand associations. *Journal of Sport Management*, *28*(1), 49-67. http://dx.doi.org/10.1123/jsm.2011-0153

Laurent, G., & Kapferer, J. N. (1985). Measuring consumer involvement profiles. *Journal of Marketing Research*, *22*(1), 41-53.

Le Penne, S. (2017). Longing to belong: Needing to be needed in a world in need. *Society, 54*(6), 535-536.

Lee, M. A., Kunkel, K., Funk, D. C., Karg, A., & McDonald, H. (2020). Built to last: relationship quality management for season ticket holders. *European Sport Management Quarterly*, *20*(3), 364-384. https://doi.org/10.1080/16184742.2019.1613438

Lianopoulos, Y., Theodorakis, N. D., Tsigilis, N., Gardikiotis, A., & Koustelios, A. (2020). Elevating self-esteem through sport team identification: a study about local and distant sport fans. *International Journal of Sports Marketing and Sponsorship*, *21*(4), 695-718. https://doi.org/10.1108/IJSMS-10-2019-0115

Lock, D., & Heere, B. (2017). Identity crisis: A theoretical analysis of 'team identification' research. *European Sport Management Quarterly*, *17*(4), 413-435.

Lozano, E. B., & Fraley, R. C. (2021). Put your mask on first to help others: Attachment and sentinel behavior during the COVID-19 pandemic. *Personality and Individual Differences, 171*, 110487.

Majumdara, B., & Nahab, S. (2020). Live sport during the COVID-19 crisis: fans as creative broadcasters. *Sport in Society*, 1-9. https://doi-org.libproxy.temple.edu/10.1080/17430437.2020.1776972

Martin, B. (2020, March 20). NBA launches global 'NBA Together' campaign in response to coronavirus pandemic. *NBA.com.* https://www.nba.com/article/2020/03/20/nba-launches-nba-together-campaign

Mastromartino, B., & Zhang, J. J. (2020). Affective outcomes of membership in a sport fan community. *Frontiers in Psychology*, 11, 881. https://doi.org/10.3389/fpsyg.2020.00881

Maugeri, G., Castrogiovanni, P., Battaglia, G., Pippi, R., D'Agata, V., Palma, A., ... & Musumeci, G. (2020). The impact of physical activity on psychological health during Covid-19 pandemic in Italy. *Heliyon*, *6*(6), 1-8. https://doi.org/10.1016/j.heliyon.2020.e04315

Menghwar, P. S., & Daood, A. (2021). Creating shared value: A systematic review, synthesis and integrative perspective. *International Journal of Management Reviews*. DOI: https://doi.org/10.1111/ijmr.12252

Miller, J. D., Crowe, M., Weiss, B., Maples-Keller, J. L., & Lynam, D. R. (2017). Using online, crowdsourcing platforms for data collection in personality disorder research: The example of Amazon's Mechanical Turk. *Personality Disorders: Theory, Research, and Treatment*, *8*(1), 26–34. https://doi.org/10.1037/per0000191

Muthén, B. (2010). *Bayesian analysis in Mplus: A brief introduction.* Retrieved from http://www.statmodel.com/download/IntroBayesVersion%203.pdf

Muthén, L. K., & Muthen, B. (2017). *Mplus user's guide: Statistical analysis with latent variables, user's guide*. Muthén & Muthén.

Ng, A. Y. (1998). *On feature selection: learning with exponentially many irreverent features as training examples* (Doctoral dissertation). Massachusetts Institute of Technology, Cambridge, MA.

Nyman, A., Josephsson, S., & Isaksson, G. (2012). Being part of an enacted togetherness: Narratives of elderly people with depression. *Journal of Aging Studies*, *26*(4), 410-418.

Oh, T., Kang, J. H., & Kwon, K. (2020). Is there a relationship between spectator sports consumption and life satisfaction?. *Managing Sport and Leisure*, 1-13. https://doi.org/10.1080/23750472.2020.1784035

Pierce, M., Hope, H., Ford, T., Hatch, S., Hotopf, M., John, A., Kontopantelis, E., Webb, R., Wessely, S., McManus, S., Abel, K.M. (2020). Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population. *Lancet Psychiatry.* https://doi.org/10.1016/S2215-0366(20)30308-4.

Pittman, M., & Sheehan, K. (2020). Brand Authenticity and Strategic Response to Crises: Symbolic Effects of Donation Type on Purchase Intent and Digital Engagement. *Journal of Current Issues & Research in Advertising*, 1-21. https://doi.org/10.1080/10641734.2020.1734503

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*, 539-569.

Popp, B., & Woratschek, H. (2016). Introducing branded communities in sport for building strong brand relations in social media. *Sport Management Review*, *19*(2), 183-197.

Porter, M., & Kramer, M. (2011). The big idea: Creating shared value. *Harvard Business Review*, *89*(1-2), 62-77.

Pynnönen, K., Törmäkangas, T., Rantanen, T., Tiikkainen, P., & Kallinen, M. (2018). Effect of a social intervention of choice vs. control on depressive symptoms, melancholy, feeling of loneliness, and perceived togetherness in older Finnish people: A randomized controlled trial. *Aging & Mental Health*, *22*(1), 77-84. https://doi.org/10.1080/13607863.2016.1232367

Raub, S., & Blunschi, S. (2014). The power of meaningful work: How awareness of CSR initiatives fosters task significance and positive work outcomes in service employees. *Cornell Hospitality Quarterly*, *55*(1), 10-18. https://doi.org/10.1177/1938965513498300

Ruihley, B. J., & Li, B. (2020). Sport and the Coronavirus Crisis Special Issue: An Introduction. *International Journal of Sport Communication*, *13*(3), 289-293. https://doi.org/10.1123/ijsc.2020-0254

Rupp, A. A., Dey, D. K., & Zumbo, B. D. (2004). To Bayes or not to Bayes, from whether to when: Applications of Bayesian methodology to modeling. *Structural Equation Modeling*, *11*(3), 424–451. https://doi.org/10.1207/s15328007sem1103_7

Sato, M., Du, J., & Inoue, Y. (2016). Rate of physical activity and community health: Evidence from US counties. *Journal of Physical Activity and Health*, *13*(6), 640-648. https://doi.org/10.1123/jpah.2015-0399

Selman, L. E., Chao, D., Sowden, R., Marshall, S., Chamberlain, C., & Koffman, J. (2020). Bereavement support on the frontline of COVID-19: Recommendations for hospital clinicians. *Journal of Pain and Symptom Management*, *60*(2), 81-86. https://doi.org/10.1016/j.jpainsymman.2020.04.024

Sharpe, S., Mountifield, C., & Filo, K. (2020). The Social Media Response From Athletes and Sport Organizations to COVID-19: An Altruistic Tone. *International Journal of Sport Communication*, *13*(3), 474-483. https://doi.org/10.1123/ijsc.2020-0220

Silva, A., Monteiro, D., & Sobreiro, P. (2020). Effects of sports participation and the perceived value of elite sport on subjective well-being. *Sport in Society*, *23*(7), 1202-1216. https://doi.org/10.1080/17430437.2019.1613376

Smith, A. (2009). Theorising the relationship between major sport events and social sustainability. *Journal of Sport & Tourism*, *14*(2-3), 109-120. https://doi.org/10.1080/14775080902965033

Smith, D. K., & Casper, J. (2020). Making an Impact: An Initial Review of US Sport League Corporate Social Responsibility Responses During COVID-19. *International Journal of Sport Communication*, *13*(3), 335-343. https://doi.org/10.1123/ijsc.2020-0241

Snyder, C. R. (Ed.). (2000). *Handbook of hope: Theory, measures, and applications*. New York: Academic Press.

Snyder, C. R., Rand, K. L., & Sigmon, D. R. (2002). Hope theory. *Handbook of positive psychology*, 257-276. Oxford, UK7Oxford University Press.

Snyder, C. R., Sympson, S. C., Ybasco, F. C., Borders, T. F., Babyak, M. A., & Higgins, R. L. (1996). Development and validation of the State Hope Scale. *Journal of Personality and Social Psychology*, *70*(2), 321-335.

Spinelli A. & Pellino G. (2020). COVID-19 pandemic: perspectives on an unfolding crisis. *British Journal of Surgery.* https://doi.org/ 10.1002/BJS.11627

Steele, H. (2020). COVID-19, fear and the future: An attachment perspective. *Clinical Neuropsychiatry*, *17*(2), 97-99.

Steger, M. F. (2017). Meaning in life and well-being. *Well-being, recovery and mental health*, 75-85. Cambridge, NY: Cambridge University Press. https://doi.org/10.1017/9781316339275.008

Strand, P. S. (2020). The security-seeking impulse and the unification of attachment and culture. *Psychological Review, 127*(5), 778-791.

Styvén, M. E., Mariani, M. M., & Strandberg, C. (2020). This is my hometown! the role of place attachment, congruity, and self-expressiveness on residents' intention to share a place brand message online. *Journal of Advertising*, 49(5), 540-556.

Su, L., Wan, E. W., & Jiang, Y. (2019). Filling an Empty Self: The Impact of Social Exclusion on Consumer Preference for Visual Density. *Journal of Consumer Research*, *46*(4), 808-824. https://doi.org/10.1093/jcr/ucz011

Su, Y., Baker, B. J., Doyle, J. P., & Yan, M. (2020). Fan Engagement in 15 Seconds: Athletes' Relationship Marketing During a Pandemic via TikTok. *International Journal of Sport Communication*, *13*(3), 436-446. https://doi.org/10.1123/ijsc.2020-0238

Su, Y., & Kunkel, T. (2019). Beyond brand fit: The influence of brand contribution on the relationship between service brand alliances and their parent brands. *Journal of Service Management*, *30*(2), 252-275. https://doi/10.1108/JOSM-02-2018-0052

Suzuki, S., Hamamura, T., & Takemura, K. (2019). Emotional fortification: Indulgent consumption and emotion reappraisal and their implications for well-being. *Journal of Consumer Behaviour*, *18*(1), 25–31. https://doi.org/10.1002/cb.1746

The Associated Press. (2020, September 08). Celtics Commit $25 Million To Address Racial Injustice. *Wbur News.* https://www.wbur.org/news/2020/09/08/celtics-commit-racial-injustice

The Guardian. (2020, July 01). Premier League and British football shuts down until April due to coronavirus – as it happened. https://www.theguardian.com/football/live/2020/mar/13/premier-league-and-british-football-set-for-shutdown-due-to-coronavirus-live

Tollefsen, D., & Gallagher, S. (2019). Advancing the'We'Through Narrative. *Topoi*, *38*(1), 211-219.

Usher, K., Durkin, J., & Bhullar, N. (2020). The COVID-19 pandemic and mental health impacts. *International Journal of Mental Health Nursing*, *29*(3), 315. https://doi.org/10.1111/inm.12726

Van de Schoot, R., Kaplan, D., Denissen, J., Asendorpf, J. B., Neyer, F. J., & Van Aken, M. A. (2014). A gentle introduction to Bayesian analysis: Applications to developmental research. *Child development*, *85*(3), 842-860. https://doi.org/10.1111/cdev.12169

Walker, M., Hodge, C., & Bennett, G. (2017). The freeloader effect: Examining the influence of engagement and attitudes in a virtual fan community. *Sport Marketing Quarterly*, *26*(3), 130-139.

Wang, X., Wong, Y. D., & Yuen, K. F. (2021). Rise of 'Lonely' consumers in the post-COVID-19 era: A synthesised review on psychological, commercial and social implications. *International Journal of Environmental Research and Public Health, 18*(2), 404.

Wann, D. L. (2006). Understanding the positive social psychological benefits of sport team identification: The Team Identification-Social Psychological Health Model. *Group Dynamics: Theory, Research, and Practice*, *10*(4), 272-296. https://doi.org/10.1037/1089-2699.10.4.272

Wann, D. L., Hackathorn, J., & Sherman, M. R. (2017). Testing the team identification–social psychological health model: Mediational relationships among team identification, sport fandom, sense of belonging, and meaning in life. *Group Dynamics: Theory, Research, and Practice*, *21*(2), 94-107. http://dx.doi.org/10.1037/gdn0000066

Wattanapisit, A., Wattanapisit, S., & Wongsiri, S. (2020). Public Health Perspectives on eSports. *Public Health Reports*, *135*(3), 295-298. https://doi.org/10.1177/0033354920912718

Weston, M. A. (2021). COVID-19's lasting impact on the sports industry: Financial, legal, and innovation. *Santa Clara Law Review, 61*(1), 121-158.

Wetsman, N. (2020). WHO declares the outbreak of the new coronavirus is a pandemic. Available from: https://www.theverge.com/2020/3/11/21156325/coronavirus-pandemicwho-declares-covid-19-outbreak-global-h1n1

Woratschek, H., Horbel, C., & Popp, B. (2018). Videographic analysis of "Weird Guys": What do relationships mean to football fans?. In The Global Football Industry (pp. 210-236). Routledge.

Wu, J., Inoue, Y., Filo, K., & Sato, M. (2020). Creating shared value and sport employees' job performance: The mediating effect of work engagement. *European Sport Management Quarterly*, 1-20. Advance online publication. https://doi.org/10.1080/16184742.2020.1779327

Yoshida, M., Gordon, B., Heere, B., & James, J. D. (2015). Fan community identification: An empirical examination of its outcomes in Japanese professional sport. *Sport Marketing Quarterly*, *24*(2), 105-119.

Yoshida, M., Gordon, B., Nakazawa, M., & Shibuya, S. (2018). Bridging the gap between social media and behavioral brand loyalty. *Electronic Commerce Research and Applications*, *28*, 208–218.

Yu, L., & Liu, H. (2003). Feature selection for high-dimensional data: A fast correlation-based filter solution. *In Proceedings of the 20th international conference on machine learning*, (pp. 856-863). https://www.aaai.org/Papers/ICML/2003/ICML03-111.pdf

Zondervan-Zwijnenburg, M., Peeters, M., Depaoli, S., & Van de Schoot, R. (2017). Where do priors come from? Applying guidelines to construct informative priors in small sample research. *Research in Human Development*, *14*(4), 305-320. https://doi.org/10.1080/15427609.2017.1370966

Table 1. Recent Transformative Sport Service Research on Fans' Well-being.

References	Research Context	Antecedents (IVs)	Mediators	Well-being outcomes
		Non-crisis condition		
Wann, Hackathor, & Sherman (2017)	Effects of sport fandom and identification with a university basketball team on students' well-being	Sport fandom Identification	Sense of belonging	Presence of meaning
Lianopoulos, Theodorakis, Tsigilis, Gardikiotis, & Koustelios (2020)	Effects of following a sport team on local and distant fans' well-being	Team Identification	Enduring team-related social connections BIRGing behaviors	Collective self-esteem Personal self-esteem
Oh, Kang, & Kwon (2020)	Effects of spectating behaviors on fans' well-being	Visiting frequency Watching frequency	N/A	Life satisfaction
Katz, Mansfield, & Tyler (2020)	Effect of consumption networks of National Football League fans on fans' well-being	Structural and interactional characteristics of a fan's social network	N/A	Perceived emotional support
		Crisis condition		
Inoue, Funk, Wann, Yoshida, & Nakazawa (2015)	Effects of attending Japanese professional soccer games on fans' well-being in a post-disaster context (2011 Great East Japan Earthquake)	Team identification	Instrumental support Emotional support	Post-disaster social well-being
Current study	Impact of involvement with a sport brand on fans' well-being amid the COVID-19 pandemic	Sport brand involvement	Brand response toward COVID-19 Perceived togetherness	Positive and Negative well-being status during COVID-19

Table 2. Measurements and Results of Validating Latent Constructs for Bayesian Mediation Analysis.

Constructs	CR	AVE	SBI	CMP	PT	EMP	HOPE	HTMT Matrix				
								SBI	CMP	PT	EMP	HOPE
SBI	0.87	0.69	**0.83**									
CMP	0.87	0.70	0.73	**0.83**				0.76				
PT	0.90	0.74	0.72	0.82	**0.86**			0.74	0.82			
EMP	0.95	0.86	-0.11	-0.03	0.01	**0.93**		0.09	0.04	0.01		
HOPE	0.84	0.64	0.30	0.48	0.43	-0.21	**0.80**	0.32	0.49	0.44	0.20	
PLE	Watching my favorite team/athlete is one of the most satisfying things I do.											
(*μ=5.98,*	I really enjoy watching my favorite team/athlete's matches.											
sdv=0.50)	Compared to other activities watching my favorite team/athlete is very interesting.											
CEN	I find a lot of my life is organised around following my favorite team/athlete.											
(*μ=5.23,*	A lot of my time is organised around following my favorite team/athlete.											
sdv=0.62)	Following my favorite team/athlete has a central role in my life.											
SIG	Watching my favorite team/athlete says a lot about who I am.											
(*μ=5.42,*	You can tell a lot about me by my favorite team/athlete that I follow.											
sdv=0.57)	When I watch my favorite team/athlete I can really be myself.											
CMP	The way my favorite team/athlete handled crisis management is timely.											
(*μ=5.81,*	The way my favorite team/athlete handled crisis management is wise.											
sdv=0.93)	The way my favorite team/athlete handled crisis management is humanity.											
PT	The statements/contents about the lockout status made me feel my favorite team/athlete and I will get through this challenging time together.											
(*μ=5.79,*	The statements/contents about the lockout status made me feel my favorite team/athlete and I will stand together during this difficult time.											
sdv=0.93)	The statements/contents about the lockout status made me feel my favorite team/athlete and I will unitedly overcome hardship.											
EMP	I feel empty inside.											
(*μ=3.76,*	I feel as though part of me is missing.											
sdv=1.83)	I am living without an aim.											
HOPE	I look ahead with hope and passion.											
(*μ=5.93,*	I am confident of future.											
sdv=0.94)	I am more likely to look forward to the positiveness.											

Note. Square root of AVE is displayed in bold along the main diagonal of the correlation matrix. CEN = centrality; CMP = crisis management performance; EMP = emptiness; PLE = pleasure; PT = perceived togetherness; SIG = sign; SBI = sport brand involvement.

Table 3. Results of Bayesian Structural Mediation Analysis.

	Path	Posterior Unstandardized β	Posterior *S.D.*	95% Credible Interval		Hypothsis
				Lower 2.5%	Upper 2.5%	
			Direct Effect			
Main Relationships	SBI → EMP	-0.52**	0.17	-0.85	-0.19	H1 - Supported
	SBI → HOPE	0.02	0.08	-0.14	0.18	H2 - Not Supported
	SBI → CMP	1.21***	0.05	1.11	1.31	
	CMP → EMP	-0.15	0.09	-0.33	0.03	
	CMP → HOPE	0.45***	0.04	0.37	0.53	
	SBI → PT	1.34***	0.06	1.22	1.46	
	PT → HOPE	0.33***	0.04	0.25	0.41	
	PT → EMP	-0.18*	0.08	-0.34	-0.02	
			Indirect Effect			
	SBI → CMP → EMP	-0.18	0.11	-0.40	0.04	H3 - Not Supported
	SBI → CMP → HOPE	0.55***	0.08	0.39	0.71	H4- Supported
	SBI → PT → EMP	-0.24*	0.11	-0.46	-0.02	H5 - Supported
	SBI → PT → HOPE	0.44***	0.06	0.32	0.56	H6 - Supported
Control Variables	Weibo → HOPE	0.89***	0.18	0.54	1.24	
	Wechat → HOPE	1.04***	0.30	0.45	1.63	
	BBS → HOPE	1.55***	0.27	1.02	2.08	
	FanGroup → HOPE	-0.13	0.33	-0.78	0.52	
	TikTok → HOPE	1.44***	0.34	0.77	2.11	
	OG → HOPE	0.04	0.89	-1.70	1.78	
	NSB eSports → HOPE	-0.04	0.41	-0.84	0.76	
	OSA → HOPE	0.06***	0.01	0.04	0.08	
	AGE → HOPE	0.00	0.21	-0.41	0.41	
	INC → HOPE	-0.30	0.16	-0.34	0.40	
	PREFRE → HOPE	0.03	0.19	0.03	0.03	
	PRESP → HOPE	0.00	0.01	-0.02	0.02	
	CINSP → HOPE	0.29***	0.02	0.25	0.33	
	FAN → HOPE	0.11	0.56	-0.99	1.21	
	WTP → HOPE	-0.02	0.03	-0.08	0.04	
	REL → HOPE	0.23***	0.02	0.19	0.27	
	Weibo → EMP	-2.64***	0.73	-4.07	-1.21	
	Wechat → EMP	-2.72**	1.21	-5.09	-0.35	
	BBS → EMP	-2.70**	1.10	-4.86	-0.54	
	FanGroup → EMP	-0.12	1.35	-2.77	2.53	
	TikTok → EMP	-2.14	1.40	-4.88	0.60	
	OG → EMP	0.03	0.45	-0.85	0.91	
	NSB eSports → EMP	0.12***	0.02	0.08	0.16	
	OSA → EMP	-0.05	0.85	-1.72	1.62	
	AGE → EMP	0.01	0.02	-0.03	0.05	
	INC → EMP	-0.03	0.65	-1.30	1.24	
	PREFRE → EMP	0.07	0.68	-1.26	1.40	
	PRESP → EMP	0.00	0.00	0.00	0.00	
	CINSP → EMP	-0.44***	0.09	-0.62	-0.26	
	FAN → EMP	-0.08***	0.02	-0.12	-0.04	
	WTP → EMP	0.41***	0.03	0.35	0.47	
	REL → EMP	-0.30***	0.08	-0.46	-0.14	
		PT	**CMP**	**HOPE**	**EMP**	
	R^2	0.64	0.65	0.24	0.14	

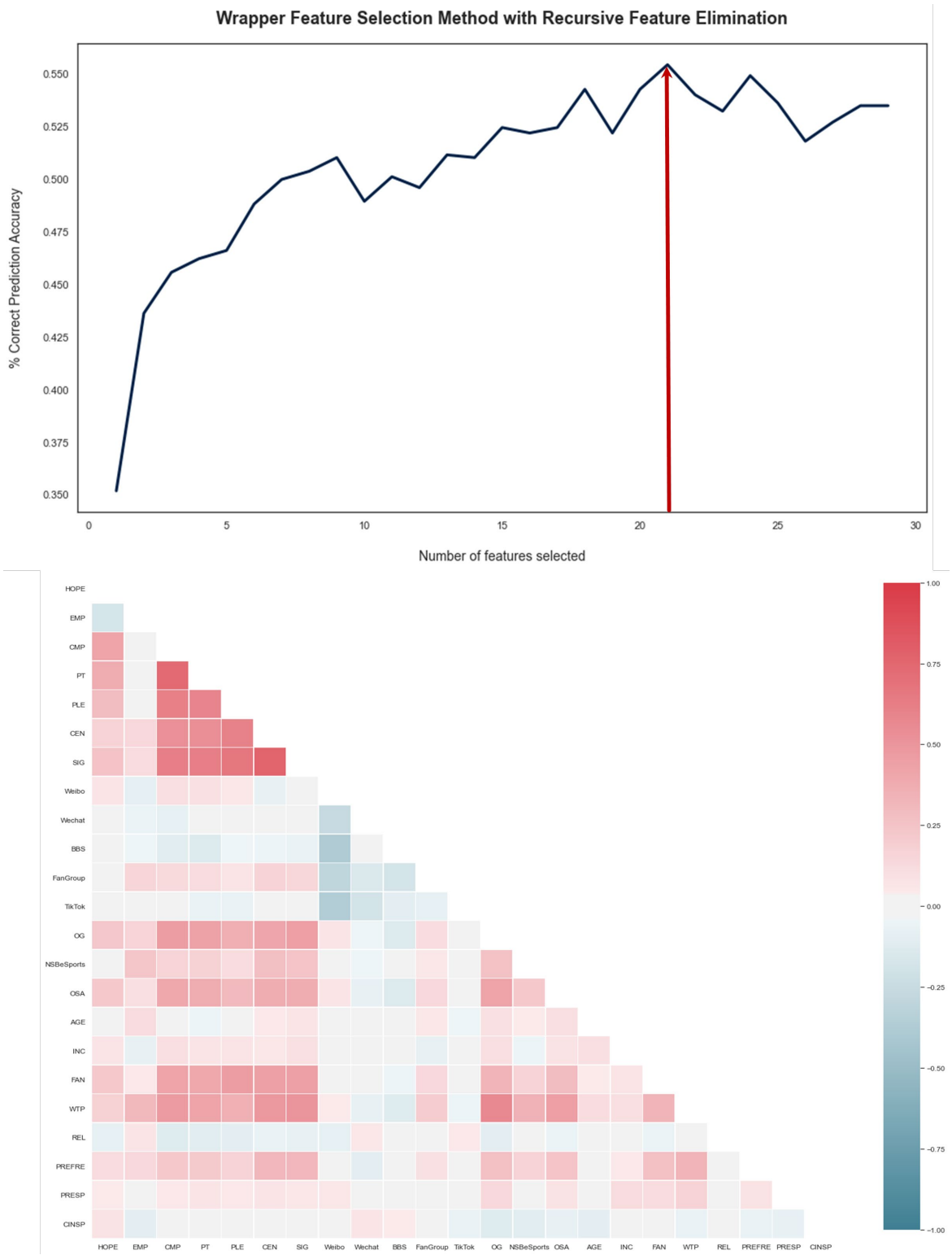

Figure 1. Visualization results of feature selection with machine learning.

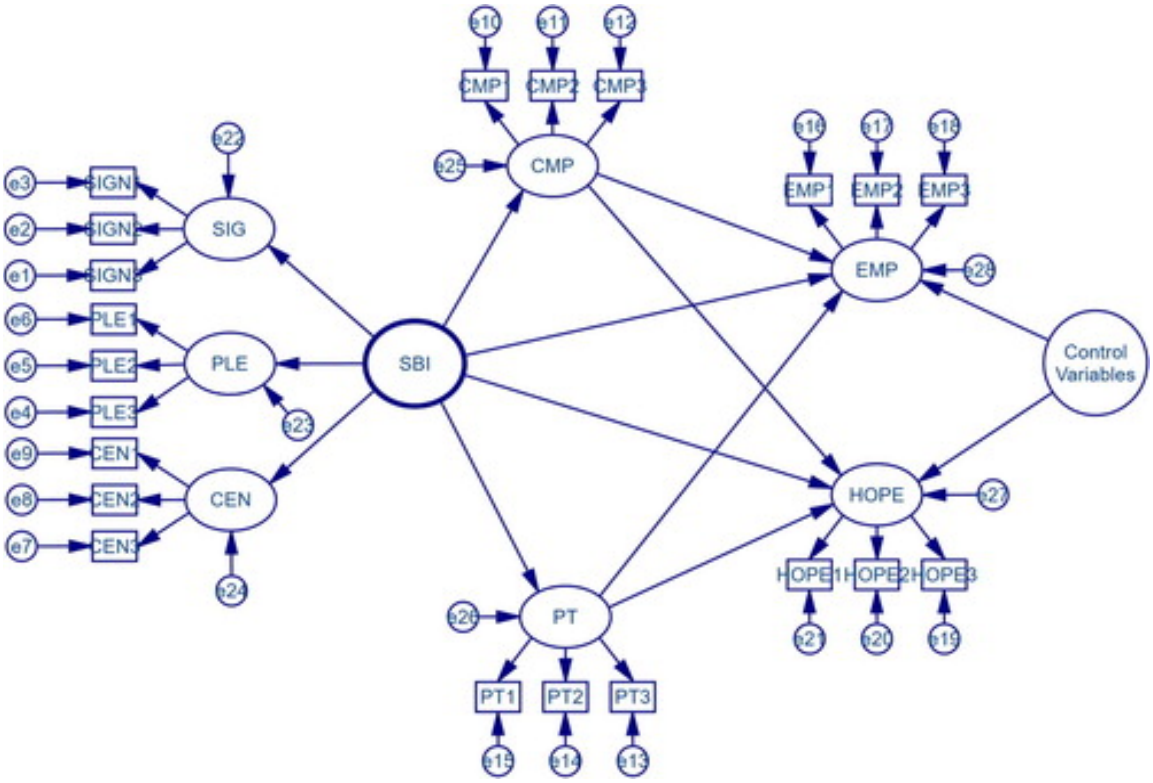

Figure 2. Tested Bayesian structural mediation model.

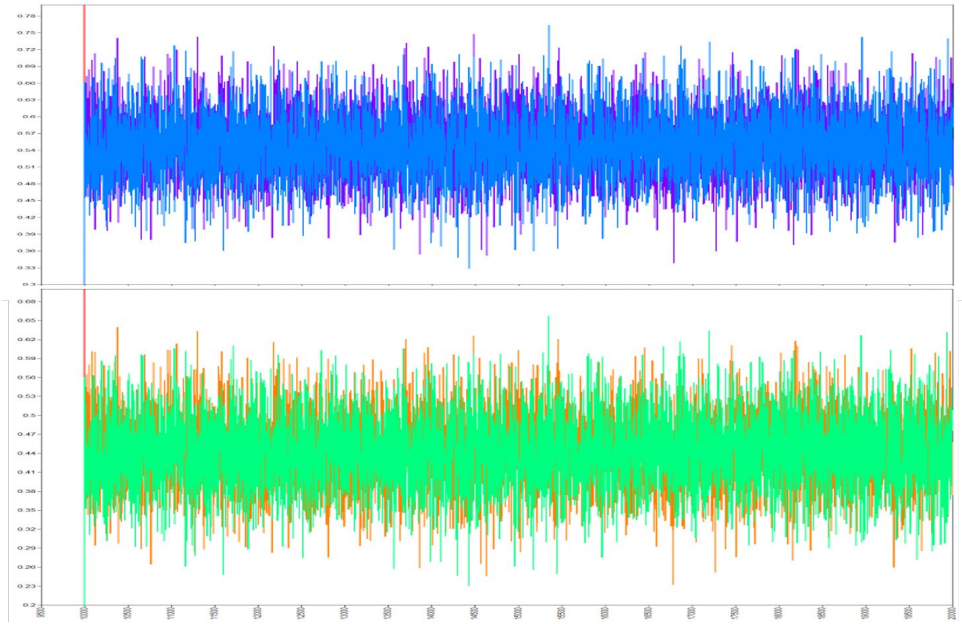

Figure 3. Bayesian posterior trace plots with MCMC algorithms for tested indirect effects